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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: Fang Sun *et al.*

Serial No. 09/603,323

Filed: June 26, 2000

Confirmation No. 3143

For: **MANUFACTURE OF WEB SUPERABSORBENT POLYMER AND FIBER**

Examiner U. Rajguru  
Art Unit 1711

Assistant Director for Patents  
Washington, DC 20231

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RESPONSE

Sir:

#10

In response to the Office Action mailed March 22, 2002, Applicant hereby submits the following remarks. In addition, please provide a one-month extension of time up to and including July 22, 2002, to answer the Office Action as provided for in 37 CFR 1.136. A check in the amount of \$110.00 for the extension of time is enclosed. If any additional fees for this response are required, the Commissioner is hereby authorized to charge them to Deposit Account No. 50-2190.

Remarks

The Office Action mailed March 22, 2002 has been carefully considered. The present invention is directed towards a web of superabsorbent polymer (SAP) and fiber made by an *in situ* neutralization, wet-laid process, wherein the degree of neutralization of the SAP is partial, preferably less than about 80 mol %. As discussed on page 4, lines 3-17, of the application, a wet-laid web of a SAP and fiber may be formed by: (1) mixing a SAP with fiber; or (2) mixing a polymer, which is not a SAP but is capable of becoming

one upon neutralization, with fiber and then *in situ* neutralizing the polymer to convert it into a SAP. As set forth on page 1, lines 9 to 13 of the application, *in situ* neutralizing means the neutralization of polymer to make it into a superabsorbent polymer is conducted after mixing the polymer with fiber during the wet-laid process of making a web, as opposed to a wet-laid process of making a web where already neutralized superabsorbent polymer is mixed with fiber. The *in situ* neutralization is more cost effective for a large scale factory production because it uses less water than the conventional wet-laid process of mixing SAP with fiber. As further discussed in the application for the present invention, webs of SAP and cellulosic fiber made by partial *in situ* neutralization, such as less than 80 mol %, exhibit excellent centrifuge retention capacity property, as compared to prior art webs made by total *in situ* neutralization, such as 100 mol % or more.

The Office Action rejected all of pending claims 1-6 under 35 U.S.C. § 103(a) as being unpatentable over Sun et al. (U.S. Patent No. 6,124,391) in view of Dahmen et al. (U.S. Pat. No. 5,409,771). ~~Sun et al.~~ is directed towards a particulate material composition having anti-caking properties that is produced by mixing SAP particles with an inorganic powder such as clay. Column 4, lines 47-48 ("A mixture of SAP particles and inorganic powder is referred to as a 'particulate material composition'.").

Sun et al. does not teach or suggest that pre-SAP acid groups are mixed with an additional substance and then partially *in situ* neutralized, as taught in the application for the present invention. To the contrary, Sun et al. teaches that the SAP is formed (the acid groups are neutralized) and then mixed with inorganic powder. Column 5, lines 3-5 and 11-12 ("[T]he SAP may be obtained by polymerizing at least about 25%, more preferably

about 55 to about 99.9% by weight of monomers having olefinically-unsaturated carboxylic and/or sulfonic acid groups. ...The acid groups are typically neutralized to at least about 25 mol %.”); Column 7, lines 23-24 (“The inorganic powder is preferably mixed with the SAP particles in an amount sufficient to achieve anti-caking characteristics...”), lines 31-33 (“The inorganic powder may be mixed with the particles of SAP in a substantially dry state, or with the addition of a liquid such as water...”), and lines 38-39 (“The inorganic powder and the particles of SAP can be intermixed in any suitable manner.”).

Similar to Sun et al., Dahmen et al. does not teach or suggest partial *in situ* neutralization. Rather, Dahmen et al. discloses a powdery water-insoluble crosslinked resin composed of unsaturated polymerizable monomer containing acid groups that are neutralized and coated with an alkylene carbonate surface X-linking agent, and then mixed with paper or fluff pulp or synthetic fibers. Column 5, lines 28-33 (“The polymers coated according to the present invention are used in absorbent articles for various kinds of application, e.g., by mixing with paper or fluff pulp or synthetic fibers...”). Therefore, Dahmen et al. does not overcome the deficiencies of Sun et al.

Independent claim 1 of the present application clearly recites a water sorptive product which is partially *in situ* neutralized. Therefore, claim 1 is patentable over Sun et al. in view of Dahmen et al. Accordingly, dependent claims 2-6 are patentable at least for the reasons with respect to independent claim 1.

This case is in condition for allowance and such action is respectfully requested.  
If any issues remain unresolved, applicant would welcome the opportunity for a telephone interview to expedite allowance and issue.



Date: July 22, 2002  
File No. 5003073-005US2

Respectfully submitted,

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